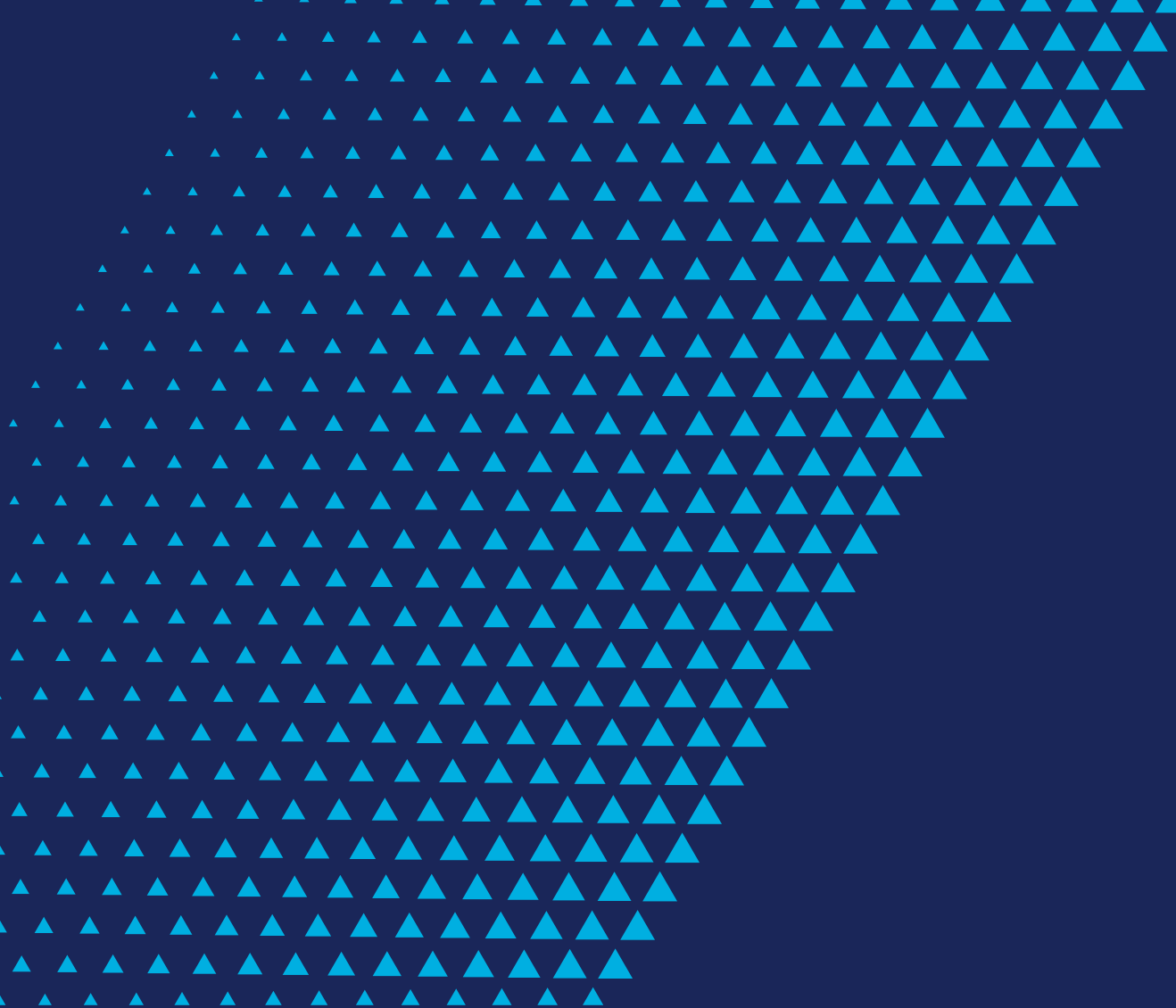


White paper

Turning Vision into Impact: India's AI Opportunity

The potential of AI data
cities for India



Access Partnership makes innovative technology work for the world. Through guiding businesses and governments through complex regulatory challenges, Access Partnership designs frameworks that optimise deployment, drive growth, and attract investment.

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AA Access Partnership Pte Ltd

Foreword

Dr. Viswanath Pingali

At the turn of the decade, the term: Artificial Intelligence, conjured images of science fiction. Today, right from healthcare to education to manufacturing to pretty much every activity, AI has penetrated into our existence. This presents the economies with a unique opportunity to grasp this technology and move forward on a faster trajectory. In this context, the report by Access Partnership, 'Turning Vision into Impact: India's AI Opportunity', is welcome, indeed!

This report argues that India must urgently develop AI data cities. Since data is crucial for AI to flourish, these cities would play a pivotal role in harnessing the power of AI. While private organisations may play their part in developing data centres, a national plan that is carefully calibrated and complements these efforts would go a long way towards turning the vision of a USD 30 trillion economy by 2047, a reality.

The report outlines a pressing opportunity for India to become a global AI leader through urgent investment and bold innovation. The authors highlight the importance of a planned approach

through the creation of AI data cities, suggesting that these hubs of AI talent, resources, and activities will not only capture economic value but create thousands of high-paying jobs. Acting as a guide to India's AI development, this report can serve as a vital resource in helping the country achieve its economic goals while becoming a global leader in the technology that will shape our future. I can also see how such a project can be the vehicle through which India can attract its diaspora to invest and contribute to the Indian growth story."



Dr. Viswanath Pingali
Professor, Economics
Indian Institute of Management, Ahmedabad

1. India has a bold, transformational vision for 2047

India has a bold vision of achieving a USD 30 trillion economy with a per-capita income of USD 18,000-20,000 within 100 years of independence. This requires enabling the delivery of world-class infrastructure and facilities in both rural and urban areas and promoting the digital economy and investment.

The vision aims to make India a global leader in digital innovation and technology and a champion of environmental sustainability. The strategy also calls for empowering youth with skills and education and creating more employment opportunities.

India has seen significant success in digital transformation and innovation, especially in the areas of e-commerce, fintech, edtech, health-tech, and agri-tech. These sectors have created new jobs, improved efficiency, and increased access to services. However, the future economy will be driven by artificial intelligence (AI). Becoming a global AI leader will be the key to achieving this vision.

AI will be crucial to achieving this vision

AI is reshaping economies globally, driving innovation across sectors and creating unprecedented economic opportunities. It is also expected to revolutionise industries ranging from agriculture, healthcare, and logistics to education and finance. Countries with robust digital ecosystems, skilled workforces, well-integrated infrastructure, and the right policy responses are best positioned to capitalise on this transformative wave.

To realise India's ambitious vision, it is critical that the country takes an equally bold and deliberate approach to attract and enable the digital infrastructure needed to capture AI's potential. India is well-positioned to capture the unparalleled scale



of AI investment opportunity ahead. Finding the right approach will bring high-quality jobs, education and skilling, as well as the rapid acceleration of start-ups and future SMEs in local communities.

For India, this represents not only an opportunity but a strategic imperative. AI is already transforming the country's digital landscape, with an estimated economic opportunity of USD 430 billion by 2030.¹ AI is revolutionising India's digital ecosystem, benefitting stakeholders including the government, businesses, start-ups, developers, users, and citizens. India saw the fifth-highest investments in start-ups offering AI-powered products and services.²

By harnessing the power of generative AI, machine learning (ML), robotics, natural language processing, and computer vision, India is witnessing a surge of interest and innovation across both government and businesses of all sizes. However, realising this opportunity will require more than just talent and technology; it will depend on leveraging India's geographic advantages and building specialised

¹ Access Partnership (2023). Accelerating India's leadership with Google. Available at: <https://cdn.accesspartnership.com/wp-content/uploads/2024/01/Accelerating-Indias-Digital-Leadership-with-Google.pdf>

² Stanford University (2023), Artificial Intelligence Index Report 2023. Available at: https://aiindex.stanford.edu/wp-content/uploads/2023/04/HAI_AI-Index-Report_2023.pdf

³ International Energy Agency (n.d.), India. Available at: <https://www.iea.org/countries/india/renewables>

⁴ Times of India (2023), India gets closer to meeting 2030 renewable energy targets with new transmission plan. Available at: <https://timesofindia.indiatimes.com/blogs/voices/india-gets-closer-to-meeting-2030-renewable-energy-targets-with-new-transmission-plan/>

infrastructure to support AI development and deployment. These efforts will be key to achieving India's ambitious Vision India 2047 goals and positioning the country as a global leader in the AI revolution.

India is well-positioned to be a leader in AI

First, India has significant renewables in its energy mix – 22% of its current energy is sourced from renewables.³ There are also ambitious plans to increase this share further by installing 500 gigawatts (GW) of renewable energy by 2030.⁴ The surge in the availability of renewable energy is especially significant given the growing sustainability commitments of leading technology companies, which are increasingly prioritising green energy to power their operations. Furthermore, guaranteed demand for clean power supports new renewable energy projects coming online and represents a key development opportunity and catalyst for India's energy sector.

Second, India benefits from a skilled workforce that is ready to support the AI revolution. With nearly five million programmers, the country boasts one of the highest AI adoption rates among knowledge workers, with 92% using generative AI at work – significantly higher than the global average of 75%.⁵ This talent base is essential for developing, scaling, and deploying AI applications across various sectors, driving innovation and economic growth.

Third, India's geographical location offers direct access to key global economic corridors, including Europe, the Middle East, China, Southeast Asia, and Australia. This strategic positioning provides India with unique advantages in facilitating international connections and becoming a central player in the global AI ecosystem.

India is well-positioned to become an AI leader. However, the competition for global AI leadership is keen. India will need bold actions to take the lead from the various dynamic, growth-oriented competitors.

⁵ Time (2024), India Is Emerging as a Key Player in the Global AI Race. Available at: <https://time.com/7018294/india-ai-artificial-intelligence-ambani/>

2. The vision needs to be backed by bold actions

The AI revolution will create new winners

Technological revolutions have reshaped the global economic landscape throughout history. The Industrial Revolution in the UK catalysed the country's rise as an economic powerhouse, while Silicon Valley's emergence as an innovative technological hub transformed the US into a leader in the digital economy. Similarly, the Internet Revolution brought about new hubs like Singapore, Frankfurt, and London, which benefitted from regulatory changes to attract and anchor capital, talent, and businesses. By creating ecosystems that encourage innovation and investment, they became the primary beneficiaries of the Internet Revolution and continue to thrive decades later.

India has also reaped the fruits of its swift and decisive policy action through liberalisation policies and facilitating the entry of private operators, catalysing its remarkable mobile connectivity revolution in the past two decades. For India to emerge a winner in this subsequent AI revolution, this demands bolder, decisive action.

Competition is heating up: India needs bold actions to drive AI leadership

A transformative approach is required for India to capitalise on its natural advantages, capture this opportunity, and take the lead in the global AI race. Recognising the race to be among the global AI leaders, countries around the world are moving swiftly to establish themselves as AI and data centre hubs. The US, the Middle East (particularly Saudi Arabia and the United Arab Emirates), China, and Southeast Asia (including Malaysia, Thailand, and Indonesia) are making substantial strides in developing data centre ecosystems to support AI growth.⁶ These nations are positioning themselves to attract global investment, secure talent, and build



essential digital infrastructure, making the need to move fast even more pertinent. The winners of this AI revolution will be countries that are able to act fast, boldly, and collaboratively with the private sector. The time to act is now.

⁶ New Straits Times (2024), Johor emerges as data centre hub powerhouse in Southeast Asia. Available at: <https://www.nst.com.my/news/nation/2024/06/1066002/johor-emerges-data-centre-hub-powerhouse-southeast-asia> and MIT Sloan Management Review (2024), How the Middle East is Emerging as a Data Center Powerhouse Amid Booming AI Demand. Available at: <https://www.mitsloanme.com/article/how-the-middle-east-is-emerging-as-a-data-center-powerhouse-amid-booming-ai-demand/>

3. AI data cities are a solution to drive India's AI leadership

The opportunity for AI data cities in India

The global AI revolution is rapidly accelerating demand for data centre capacity, driven by the increasing computational needs of AI systems. Current global demand for data centre capacity stands at approximately 55 GW, but projections estimate this could rise at a cumulative annual growth rate (CAGR) of 19-27% by 2030.⁷ Assuming a more conservative growth rate of 5.3% from 2030 to 2047 (taking the historical growth rate from 2017 to 2023), data centre demand could amount to between 410-710 GW in 2047.⁸ This translates to a need for a minimum of 355-655 GW of new data centre capacity over the coming decades.

For India, this creates both an imperative and an opportunity. To establish itself as a leading AI training and development hub, India must capture a significant share – at least 10% – of new data centre capacity to be added. This amounts to at least 35 GW of state-of-the-art data centre capacity by 2047. Achieving this target will require immediate and coordinated action, enabling India to outpace regional and global competitors in the race for AI leadership.

Massive investments into AI data centres will require a planned approach to ensure there is a holistic ecosystem of renewable power, network, and skills while also managing risks through geographic diversification of this capacity across India. A piecemeal expansion of standalone data centres will fall short. Instead, India should focus on developing 'AI data cities' (Appendix A) – areas where AI talent, resources, and activity are concentrated to support key activities like training and inference for global models. Such AI data cities would enable India to scale up quickly to meet data centre demand while fostering innovation and economic growth.



'AI data cities' will also have outsized economic ripple effects across India's economy, stimulating economic growth by positioning India as a global AI hub. These cities will serve as centres of innovation, job creation, and ecosystem development, further strengthening India's economic landscape.

The USD 6.8 trillion opportunity of AI data cities

'AI data cities' are a novel and transformative approach that can propel India forward in the global AI economy. These specialised zones are envisioned as hubs of innovation, strategically located across India and designed to:

- **Power AI Innovation:** Provide state-of-the-art digital infrastructure, including high-capacity data centres, reliable power sources, and robust connectivity, to fuel AI development and deployment.

⁷ McKinsey (2024), AI power: Expanding data center capacity to meet growing demand. Available at: <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/ai-power-expanding-data-center-capacity-to-meet-growing-demand>
⁸ Statista (2024), Data center. Available at: <https://www.statista.com/outlook/tmo/data-center/worldwide#global-comparison>

- **Attract Investment & Talent:** Offer a supportive regulatory environment with streamlined processes, attractive incentives, and a stable, predictable regulatory environment to attract investment, foster entrepreneurship, and draw top AI talent from around the globe.
- **Accelerate AI Research:** Encourage the establishment of cutting-edge research and development centres, fostering collaboration between academia, industry, and government to drive breakthroughs in AI.
- **Cultivate a Skilled Workforce:** Serve as a focal point for digital and AI skilling initiatives, providing training and education programmes to equip the workforce with the expertise needed to thrive in the AI era.
- **Foster a Thriving Ecosystem:** Create a dynamic ecosystem where data-driven businesses, start-ups, and research institutions can collaborate, innovate, and contribute to India's AI leadership.

To size this impact, this analysis assumes five such cities, each with a capacity of 3 GW, strategically distributed to complement the baseline growth in data centres. Other assumptions made to support our analysis can also be found in Appendix B.

This analysis estimates that this investment could contribute a cumulative USD 6.8 trillion in value added to India's gross domestic product (GDP) from 2027 to 2047 (Exhibit 1). Assuming India is a USD 30 trillion economy by 2047, in line with its Vision 2047 goal, the USD 6.8 trillion economic contribution of AI data cities would represent a sizable 2.3% of cumulative GDP from 2027 to 2047. About 75% of this benefit is expected to be in the form of cloud and AI-enabled productivity gains, reflecting the sizable impact that increased cloud and AI adoption can have across existing sectors of the economy.

AI data cities create economic value and jobs

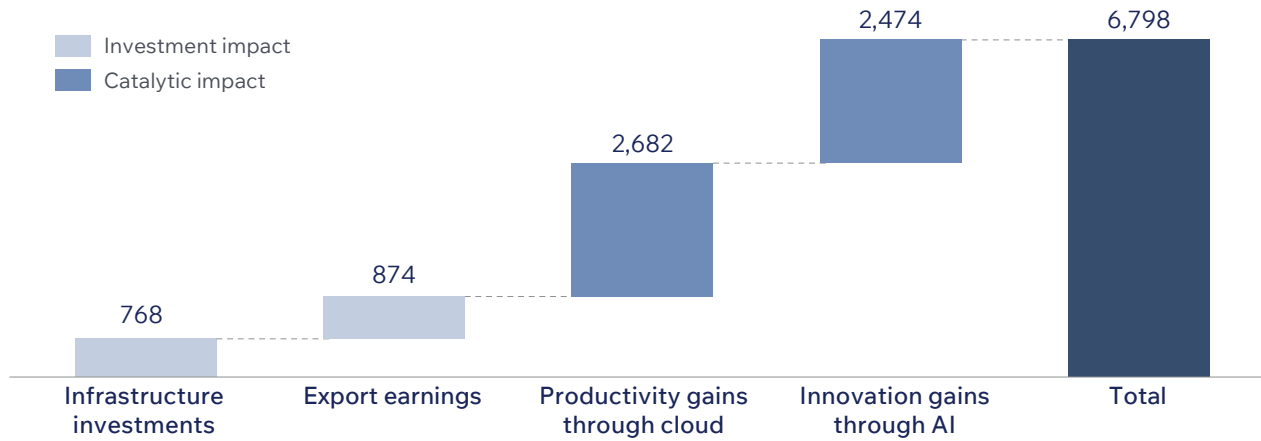
These AI data cities would contribute to India's economy through the following channels of impact (Appendix B):

- **Investment Impact:** Construction and ongoing operations of the AI data cities (such as data centre, network, and energy infrastructure) will entail significant investments in infrastructure, technology, materials, and labour, which generate economic activity and job opportunities ('Infrastructure impact'). Through the AI data centres in the AI data cities, services such as AI training and AI inferencing can be exported to clients across the globe ('Export earnings').
- **Catalytic Impact:** Existing literature finds that firms using cloud and AI have higher productivity compared to firms that do not.⁹ Greater availability and adoption of AI and cloud are expected to drive efficiency gains, cost savings, and risk mitigation, support greater scalability in existing sectors, and introduce new use cases, representing productivity gains for India ('Productivity gains through cloud' and 'Innovation gains through AI').

⁹ Gal et al (2019) suggest evidence of a positive effect of cloud computing on multi-factor productivity growth. *Digitalisation and productivity: In search of the holy grail – Firm-level empirical evidence from EU countries*. Available at: <https://www.oecd-ilibrary.org/docserver/5080f4b6-en.pdf?expires=1732702853&id=id&accname=guest&checksum=9E5464ED5EF3F4EE517DFA1B721965FA>. We reference multi-country studies from which we derive a weighted average of this relationship between multi-factor productivity and AI usage. Source: OECD (2021), "A portrait of AI adopters across countries". Available at: https://www.oecd-ilibrary.org/science-and-technology/a-portrait-of-ai-adopters-across-countries_0fb79bb9-en

Exhibit 1

The economic impact of AI data cities in India
Cumulative GDP contribution*, 2027-2047 (USD billion)



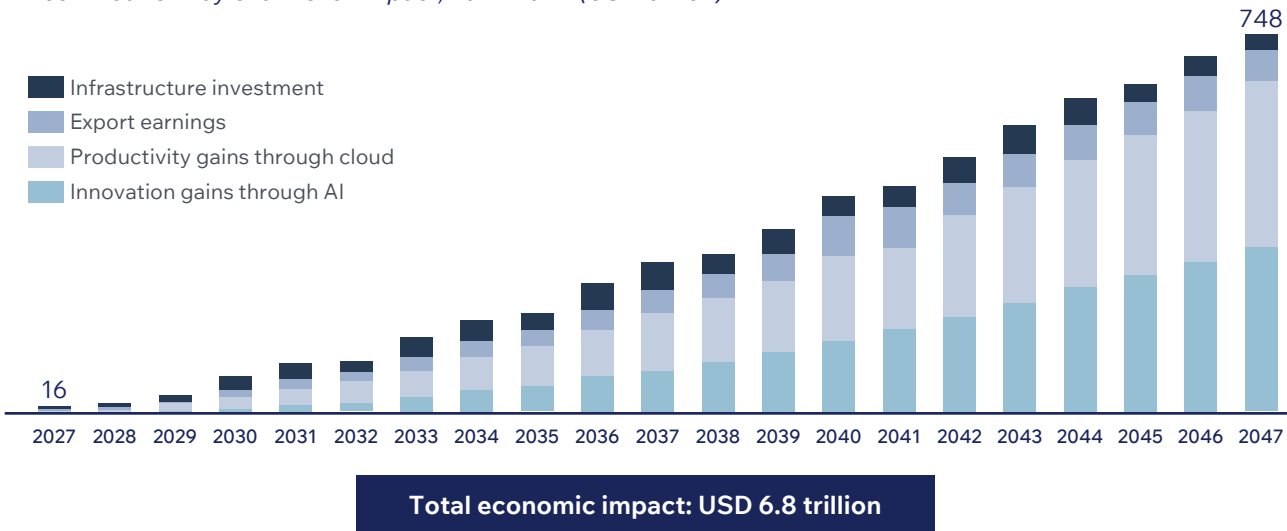
*These estimates represent the value-added contribution to GDP
NOTE: Estimates may not sum due to rounding

SOURCE: Access Partnership analysis

The impact grows from USD 16 billion in 2027 to almost USD 750 billion in 2047, illustrating the accelerated impact of acting now to realise the fruits of AI leadership (Exhibit 2).

Exhibit 2

The economic impact of AI data cities in India
GDP contribution* by channel of impact, 2027-2047 (USD billion)



*These estimates represent the value-added contribution to GDP

SOURCE: Access Partnership analysis

This increase in economic activity is also estimated to support more than 39 million jobs (Exhibit 3). The investment impact supports jobs directly involved in the construction, ongoing operations, and supply chain infrastructure of AI data centres, with workers employed in roles such as engineering, information technology, skilled technicians, utility tradespersons, security, advanced logistics services, and equipment repair and maintenance. The productivity and innovation gains also support jobs by enabling businesses across various sectors to

increase their output. As these businesses become more efficient and expand their activities, they require additional staff to meet growing operational demands, driving employment growth throughout the broader economy.

Assuming India's population reaches 1.7 billion and it attains a labour force participation rate of 75% for those of working age, the 39.5 million jobs supported would represent a sizable 4.1% of the projected labour force of 975 million people in 2047.

Box 1: Can AI data centres enable downstream investments?

In addition to the economic and employment impact estimated above, AI data centres also play a crucial role in attracting downstream investments.

- R&D Centres:** Having access to AI data centres could boost local R&D. For example, the rapid expansion of Taiwan's data centre market has created widespread opportunities across its technology sector. As a result, global tech companies such as Google, Microsoft, and Amazon have been expanding their manufacturing and R&D footprint in Taiwan, investing millions and creating thousands of high-value jobs. Similarly, in Dublin (Ireland), pharmaceutical and MedTech manufacturing firms (e.g., Pfizer and Medtronic) utilise the advanced computing capabilities from data centres for quality assurance and Industry 4.0 integration.
- Regional Headquarters (HQs):** Many global institutions cite access to infocommunication and telecommunication (ICT) and data centre infrastructure as being critical to delivering regional business growth. As a result, more international businesses are seeking to relocate their regional HQs to the jurisdiction of their regional data centre. For example, out of around 7,000 multinational corporations in Singapore, 4,200 host their regional HQs there and are highly likely to rely on access to local data centres for reduced latency and greater resiliency.
- Start-ups:** The largest start-up hubs (by value of venture capital deals) are also the biggest data centre hubs in the world. Cities like San Francisco, New York, London, Beijing, and Singapore have attracted digital start-ups due to the strength of their digital infrastructure. For example, in India, Maharashtra leads in the number of data centre builds (in terms of capacity) and start-ups. Mumbai is home to nearly half of all data centres in India, and this is a key factor in Maharashtra registering the highest share (19%) of start-ups recognised in the country. In fact, since the launch of Industrial Policy 2019, which focused on integrated data centre parks as a strategic area, the number of start-ups in Maharashtra has almost tripled.
- Manufacturing:** AI data centres will operate over a 20-30 year period. During this time, there will be significant demand for networking equipment, servers, chips, and power and cooling equipment. For example, in Phoenix (Arizona, US), data centre investments by companies like Microsoft, Digital Realty, and CyrusOne, have created downstream investment through TSMC's USD 65 billion semiconductor manufacturing facilities and investments in solar panel manufacturing and battery storage solutions.

¹⁰ Google (2024), Our newest hardware office in Taiwan. Available at: <https://blog.google/around-the-globe/google-asia/taiwans-new-hardware-office>

¹¹ Amcham (2024), Taiwan as a Data Hub. Available at: <https://topics.amcham.com.tw/2024/02/taiwan-as-a-data-hub/>

¹² Forbes (2020), Another U.S. Tech Company Is Expanding In Talent-Rich Taiwan. Available at: <https://www.forbes.com/sites/ralphjennings/2020/01/21/another-us-tech-company-is-expanding-in-talent-rich-taiwan/>

¹³ The Business Times (2019), Singapore's hook as a site for corporate treasuries. Available at: <https://www.businesstimes.com.sg/opinion-features/columns/singapores-hook-site-corporate-treasuries>

¹⁴ Knight Frank (2023), Q1 2023 Data Centre Report. Available at: <https://www.knightfrank.com.au/blog/2023/05/26/consistent-demand-for-data-centre-services-continues-to-drive-growth-across-asia-pacific>

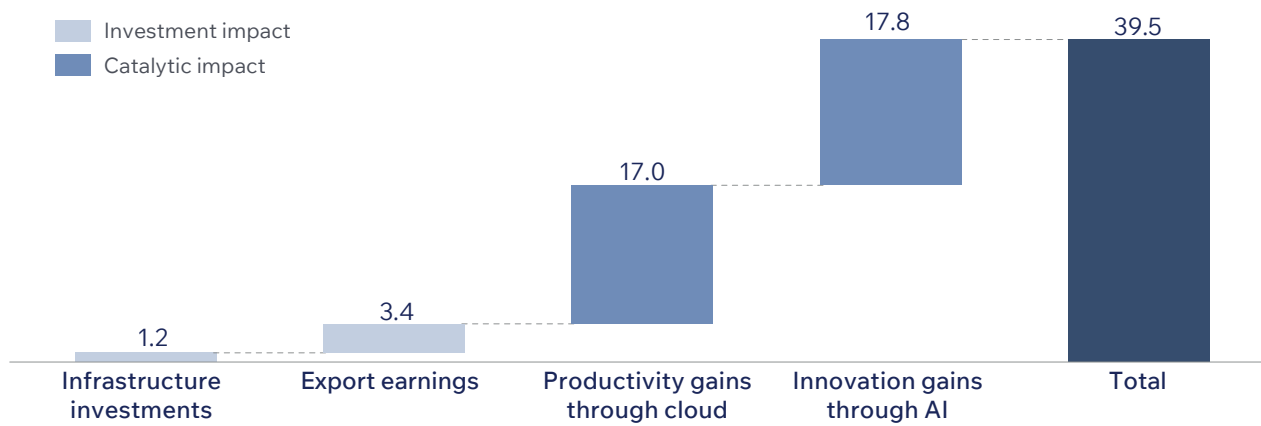
¹⁵ Government of Maharashtra (2024), Economic Survey of Maharashtra 2023-24. Available at: <https://maithi.maharashtra.gov.in/wp-content/uploads/pdf/2023-24.pdf>

¹⁶ MCI, India (2023), DPIIT recognises 1, 17,254 startups as on 31st Dec 2023. Available at: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2002100>

¹⁷ TSMC (2024), TSMC Arizona. Available at: <https://www.tsmc.com/static/abouttsmc/az/index.htm>

Exhibit 3

Jobs supported by five AI data cities in India
Millions of full-time equivalents (FTEs), by channel, in 2047



NOTE: Estimates may not sum due to rounding

SOURCE: Access Partnership analysis

Even a single AI data city can have national impact – up to USD 2.1 trillion in total value added from 2027 to 2047 and up to 10 million jobs supported per AI data city by 2047. The concept is replicable across the different regions in the country and the impact gets distributed throughout the country.

AI data cities enable further investments in India’s digital, energy, and manufacturing ecosystems

A concerted focus on AI leadership to catalyse growth and innovation will help India achieve its ambitious aims for economic development, envisioned in initiatives like Vision India 2047 and Digital India. These initiatives are pivotal to transforming the country into a digitally empowered society.

AI and cloud services democratise access to IT resources, providing crucial support to India’s burgeoning start-up ecosystem. By mitigating the high upfront cost of IT infrastructure investment, AI and cloud services enable start-ups to launch and scale their operations rapidly, fostering innovation

and entrepreneurship.¹⁸

The establishment of AI data cities will also generate significant network effects, attracting and developing specialised expertise and stimulating further investments in high-end manufacturing and Industry 4.0 technologies. This, in turn, supports the building of new data centres and data cities.

Data centre demand is also incentivising a ramp-up of renewable energy capabilities, with hyperscalers making investments that enable new renewable energy projects to come online. These include Google’s agreement with Power Capital Renewable Energy for 58 MW of new-to-the-grid capacity from the Tullabeg solar farm in Ireland.¹⁹

Overall, the development of AI data cities would elevate India’s competitive position in the race to attract large AI infrastructure investors, enhancing its reputation as an attractive and future-ready economy. These advancements would not only help India achieve its ambitious policy objectives but also position it as a key player in the global digital economy.

¹⁸ PwC (2024) The strategic role of data centres in empowering India’s digital revolution. Available at: <https://www.pwc.in/assets/pdfs/the-strategic-role-of-data-centres-in-empowering-indias-digital-revolution.pdf>
¹⁹ Google (2023), Google’s clean energy progress in Ireland. Available at: <https://blog.google/outreach-initiatives/sustainability/googles-clean-energy-progress-in-ireland/>

4. Policy actions are needed to make AI data cities a reality

AI data cities are crucial to realise India's AI ambitions. To capitalise on this AI opportunity, India needs a pro-AI policy ecosystem.

Fostering AI adoption and skills development: Develop policy ecosystem, workforce partnerships, and collaborations

To equip its workforce with the skills necessary to support a global AI hub, India should prioritise policy actions that encourage widespread AI adoption and skills development. This involves integrating AI-focused education and training into national curricula at all levels, fostering partnerships between educational institutions and private sector entities to develop specialised AI programmes, and providing incentives for reskilling and upskilling the current workforce.

Additionally, the government could introduce grants or subsidies for businesses adopting AI-driven solutions, creating demand for skilled AI professionals. Establishing AI research and innovation hubs, with collaborative opportunities for academia and industry, would further enhance India's AI talent pipeline and ensure its readiness to meet global standards.

At the same time, regulations should promote the growth of the AI ecosystem by supporting infrastructure development, encouraging investment, and upholding responsible, transparent, and accountable AI practices. To remain relevant, the policy framework should include industry consultations and periodic reviews to adapt to technological advancements and global best practices. This approach will ensure innovation while maintaining responsible AI development. These efforts would support AI adoption and position India as a competitive player in the global digital economy.



Attracting investments: Provide competitive landscape to win foreign investments

To effectively position India as a competitive global AI hub, regulatory reforms should include updating current acts and providing tax incentives that make investment in AI data cities more attractive. For example, India can consider updating the SEZ Act of 2005 to recognise and facilitate AI data cities within existing special economic zones (SEZs), enabling specialised zones with internationally aligned standards and regulations that are optimised for rapid development of digital infrastructure and AI.

Tax exemptions would support the establishment of AI data cities, where revenue is not directly generated domestically, encouraging international companies to invest and set up operations. Additionally, providing tailored incentives like those seen in India's GIFT City (Gujarat International Finance Tec-City) would further boost the country's appeal as an investment destination. For example, the AI data cities could follow the exemptions

provided to SEZs, such as income tax, corporate tax, and exemptions from Goods and Services Tax (GST) and stamp duty.

Providing tax certainty will also be crucial. For example, the industry would need clarification about the applicability of business connection/permanent establishment provisions, in case data hosting services from the AI data city in India are provided to a digital service provider outside India. By creating a competitive tax environment and improving the ease of doing business, India can draw in global capital and foster the growth of AI and digital infrastructure essential for the country's technological transformation.

Encouraging AI model training: Modernise copyright laws

To ensure India remains competitive in the global AI race, it is essential to implement regulatory frameworks that support innovation. One critical area is copyright law, particularly with respect to the use of data for AI model training and inference. A copyright framework that supports innovation and cumulative creativity, including frameworks to allow developers to train AI models on publicly available data, is one strong predictor of whether a country will be an AI leader. AI models require billions of data points to train responsibly, ensuring cultural relevance, varied perspectives, and reduced bias. For AI systems to learn from and engage with diverse information sources and datasets, copyright frameworks should allow for broad usage of data inputs.

To ensure that copyright frameworks achieve these goals, India should ensure that users, scientists, innovators, researchers, and creators using these tools are fully represented within the policymaking process. India could follow the example of jurisdictions like Singapore, which introduced fair-use exemptions for AI research and development in 2021. These exemptions would allow AI companies and researchers to train world-leading AI models in India with regulatory and legal confidence. By aligning copyright regulations with the needs of AI innovation, India can ensure its competitiveness in the global AI landscape while encouraging responsible use of data and intellectual property.

Incentivising investment in international connectivity: Strengthen telecommunications infrastructure

To catalyse AI leadership, it is also essential to build international digital connectivity by encouraging greater connectivity investment. AI industrialisation, including training and inference, requires significant bandwidth. Additional connectivity investment, such as the commissioning of additional subsea cables, will support bandwidth requirements and have a multiplicative effect on the potential for AI to transform sectoral use cases and applications. Improved subsea connectivity will also cement India's position as a regional transit hub, as well as enhance national security and resilience of telecommunications infrastructure.

International connectivity providers could also benefit from the creation of specialised transit licences. These licences clarify the regulatory frameworks for connectivity providers in instances where data does not terminate in the country, providing a legal framework that governs how these connectivity providers can operate within a country. This enables them to establish their operations without compromising regulatory compliance or facing unnecessary bureaucratic hurdles.

Additionally, streamlining the cable landing process and simplifying the process for cable repair ships would further enhance India's competitiveness by reducing the complexity and cost of international connectivity. These changes would align India with best practices around the globe and enhance its attractiveness as a destination for foreign investment in cloud services and AI infrastructure, fostering greater innovation and growth in the tech sector. By aligning regulatory frameworks with the practical needs of data centre providers, India could create a more business-friendly environment conducive to building a robust digital infrastructure.

5. India's path to becoming a global AI hub

Throughout history, transformative technologies have reshaped economies by making new locations pivotal. Access to oil and telecommunication networks revolutionised the global economy, creating winners across the world. Today, the rapid expansion of data centres presents an opportunity for new locations to take the lead in shaping the next global industrial revolution.

India stands at the cusp of an AI revolution – it is time to leverage the growing AI opportunity and emerge as a global hub for AI-driven innovation. With AI data cities, India can unlock substantial economic benefits and meet the other policy objectives outlined in Vision India 2047.

However, similar to past industrial revolutions, the winners will be the countries that can move fast and develop the right policy response. It is imperative that India implements timely and proactive policy reforms and fosters a supportive digital ecosystem. Only through bold, transformative actions, such as creating AI data cities, can India ensure that it remains a leader in the rapidly evolving global AI landscape, attracting the investment and talent necessary for long-term success. The time to act is now, before the window of opportunity for establishing India as a global AI leader passes.



Appendix – Approach to estimating economic impact

Appendix A – What are AI data cities?

Securing large-scale investments into AI data centres in India will require a planned approach to ensure there is a holistic ecosystem of renewable power, electrical and network infrastructure, and skills while also managing risks through geographic diversification of this capacity across India.

‘AI data cities’ are specialised and concentrated geographical zones within India with advanced digital infrastructure and a supportive regulatory environment. Deliberately enabling the development of clusters of high-capacity data centres in strategic locales will nurture data-driven businesses, especially in AI, encourage the establishment of R&D centres focused on AI within the data cities, and establish a locus for digital and AI skilling initiatives. As areas where AI talent, resources, and activity are concentrated, these AI data cities will create significant activity for supporting industries and the broader adoption ecosystem.

AI Data City: Massive AI data centres for training and inference for global models will form the core of the AI Data City. These data centres will be built and operated by multiple vendors. Substantial investments in new renewable energy infrastructure required for these data centres include new transmission lines, substations, reliable low-carbon energy generation sources, and clean energy storage solutions. These new investments can be covered by industrial-scale off-takers. Alongside this, the immediate industries surrounding the data centres would also include research and development (R&D) institutes that help develop cutting-edge technologies, data-driven businesses that leverage the infrastructure to create innovative AI and digital solutions, and skilling and training hubs that train local talent to build, maintain,



operate, and support data centres and their vast enabling technical infrastructure.

Supporting Ecosystem: Other supporting industries along the supply chain will also need to grow to support AI data cities. These range from professional services firms that help to support the integration and adoption of cloud and AI services, to firms supporting the manufacturing and provision of semiconductors and graphics processing units (GPUs), advanced networking equipment, renewable energy components such as photovoltaic (PV) cells, batteries, transmission, and turbines, as well as power and cooling equipment, at scale. Technicians and tradesmen skilled at the assembly and installation of these technologies will also be required, as will real estate managers and investors. Housing, transport, and civil services infrastructure will also have to be developed around the data city area.

Adoption Ecosystem: AI data cities also stimulate broader economic activity and job growth through AI adoption, such as optimising the delivery of

public services or helping enterprises automate repetitive tasks. Citizens are also using AI to boost productivity in their work, for leisure activities like personalised content recommendations and interactive gaming, and for creative pursuits like music or art generation.

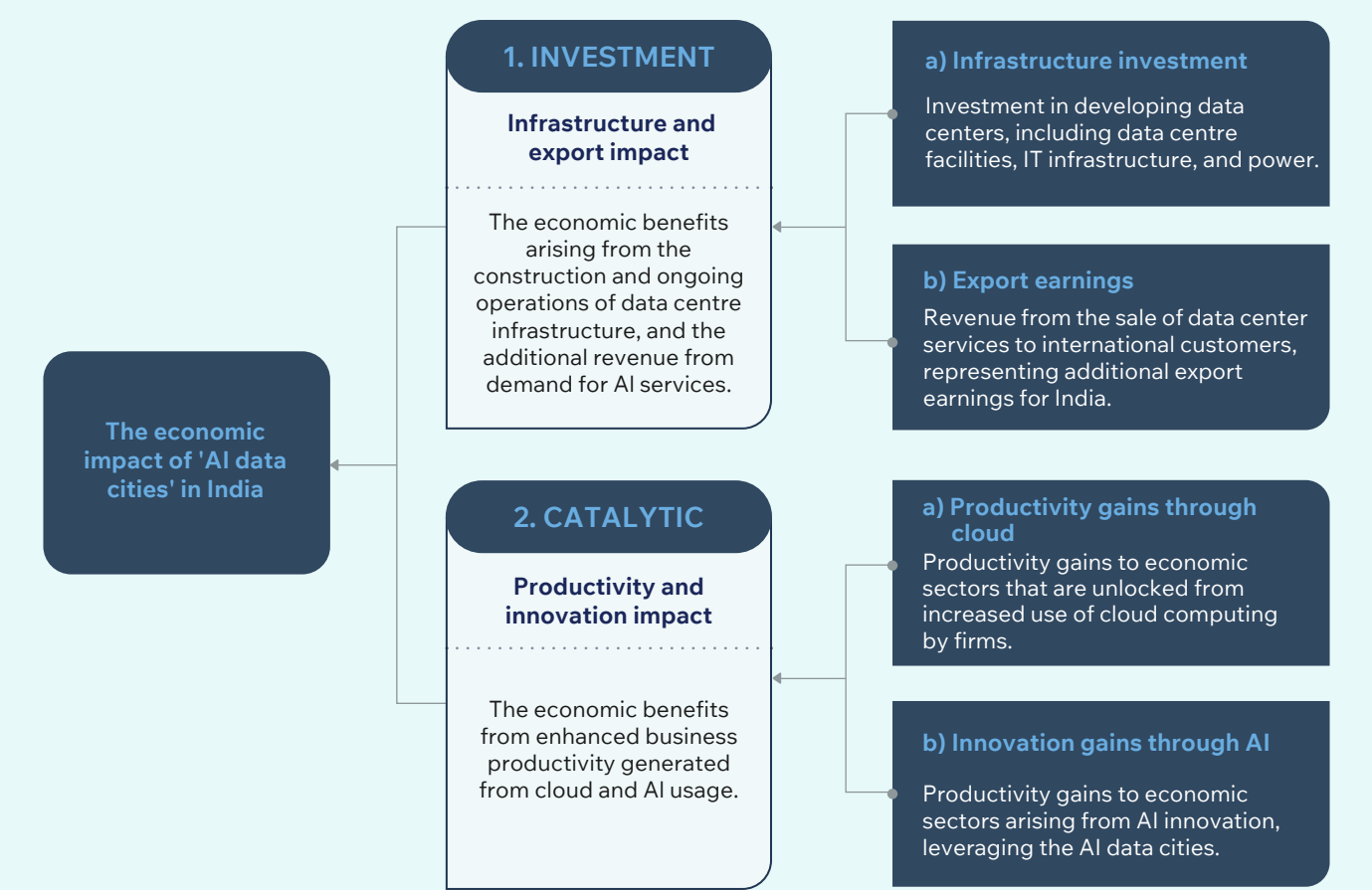
Appendix B – Economic impact methodology and assumptions

The first 3 GW data city is expected to be operational in 2027, with a gradual ramp-up of capacity coming online over a span of five years,

beginning with 450 MW in 2027, 450 MW in 2028, 600 MW in 2029, 750 MW in 2030, and 750 MW in 2031. We have assumed that four more data cities will be initiated in the subsequent years, beginning in the years 2030, 2033, 2036, and 2039, with similar capacity ramp-ups. Separately, it is assumed that India’s nominal GDP will grow at a rate of 9.3% a year, reaching USD 30 trillion in 2047.

Our methodology assesses the following channels of impact:

Estimating the economic impact of ‘AI data cities’ in India



SOURCE: Access Partnership analysis

- **Channel 1a: Economic contribution from infrastructure investment:** This component refers to the economic contributions from capital investments in the AI data centre infrastructure in the AI data cities, as well as expenditure on its ongoing operations. The contribution from the construction and operations of AI data centres is based on the profile of CAPEX and OPEX over the 2027-2047 period. The CAPEX profile has been constructed based on the projected costs of the data centre shell and buildout and machine provisioning. We also apply assumptions on the share of local content in construction and the lifespan of equipment, based on publicly available data.²⁰ OPEX over the period is assumed to be a constant annual cost across 2027-2047, which includes the costs of white space lease, network services, electricity, and other data centre operations. AI leadership.
- **Channel 1b: Economic contribution from export earnings:** This component refers to the economic contributions from the revenue earned from the export of AI services, enabled by the availability of the AI services provided by the new AI data cities. We assume that given the relatively high demand, the AI data centres will have 10.5% vacancy in 2027, with this share falling linearly to reach 8.5% by 2047. We assume 60% of the available AI data city capacity is used for export from 2027 through 2047, with the remaining 40% for domestic consumption. We then apply a revenue multiplier (i.e., the estimated revenue per MW exported) to the profile of exported AI data centre capacity.
- **Channel 2a and 2b: Economic contribution from productivity gains through cloud and innovation gains through AI:** This component refers to the economic contribution from higher economy-wide productivity as a result of higher cloud and AI use among businesses in India, enabled by the availability of the AI services provided by new AI data cities. These effects comprise economy-wide impacts, with the analysis disaggregating the economy into three sectors: manufacturing, financial services, and other services. We adopt this disaggregation as we recognise that each sector adopts AI to different extents. Productivity improvements relate to higher GDP insofar as greater technical efficiency enables private sector firms to produce higher levels of output

for the same level of input and earn higher incomes. A multi-step approach is adopted to estimate these productivity gains. First, we convert AI data centre capacity made available for domestic consumption into additional spending on cloud and AI. Using the historical correlation between additional spending and adoption across different countries, we estimate the impact of this increased spending on cloud and AI adoption rates. Furthermore, we assume that 5% of cumulative AI data centre capacity (representing freed-up capacity from cost optimisation activities by existing customers) and 100% of annual incremental data centre capacity will unlock further cloud and AI adoption each year. Obtaining cloud and AI adoption projections into the future, we estimate productivity growth based on the link between cloud and AI adoption and productivity.

The economic contribution estimates are used as inputs into an Input-Output model for India's economy to estimate direct, indirect, and induced contributions to value added. The number of local full-time equivalent (FTE) jobs supported is then estimated by multiplying the spillover effects by the ratio of local sector employment to sector output.

²⁰ Koomey, J., Brill, K., Turner, P., Stanley, J., & Taylor, B. (2007). "A Simple Model for Determining True Total Cost of Ownership for Data Centres". Available at: <https://m.softchoice.com/files/pdf/about/sustain-enable/simplemodeldeterminingtrueco.pdf>

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